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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,854	05/16/2006	Yoshiyuki Nagaoka	59371US004	7905
32692 7590 08/14/2007 3M INNOVATIVE PROPERTIES COMPANY PO BOX 33427 ST. PAUL, MN 55133-3427			EXAMINER SCHILLER, ALINA	
			ART UNIT 3609	PAPER NUMBER
			NOTIFICATION DATE 08/14/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.		Applicant(s)	
	10/595,854		NAGAOKA, YOSHIYUKI	
	Examiner		Art Unit	
	Alina Schiller		3609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☒ Claim(s) 2 & 6 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>11/18/2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: in page 2, line 17, "peeing" should be "peeling"; in page 3, lines 20 and 24, "maker" should be "marker"; in pages 6, 7, 10, and 11, use of metric (SI) units (ex, page 6, line 13: "-20°C"; page 10, line 14: "20 cm") should be followed by the equivalent English units (MPEP 608.01[R-5] IV).

Appropriate correction is required.

Claim Objections

2. Claims 2 and 6 are objected to because of the following informalities: the wording is confusing, being vague and indefinite. Appropriate correction/rewording is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1, 4, 5, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haunschild et al 5,981,033 or Poole 3,036,928 in view of Boeing**

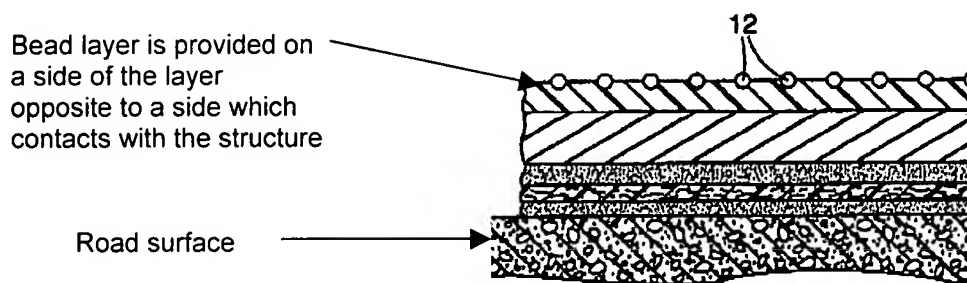
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A&M Environmental Technotes, Volume 6, Number 2 (May 2001) or Matsumoto website

(http://web.archive.org/web/20010719003525/http://mtmtys.co.jp/english/product/fmc_f_f.htm) (July 19, 2001).

Regarding claim 1, Haunschild or Poole discloses a temporary marking material comprising a layer containing a binder, a pigment, and microballs (Haunschild: col. 3, lines 8-10, 14, 26-27; Poole: col. 2, lines 12-14; 28-30), wherein said layer is adhered to a surface of a structure for use by virtue of the binder contained in the layer. However, Haunschild or Poole fails to disclose that the layer and microballs are thermally-expansible. Boeing A&M Environmental Technotes teaches thermally-expansible microballs, which enclose a gas, which expands when exposed to elevated temperatures, and as the microballs expand, they expand and pop the layer, in order to easily remove it. Matsumoto website teaches thermally-expansible microballs mixed and formed into a layer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the microballs and layer of Haunschild or Poole to be thermally-expansible by using thermally-expansible microballs, as taught by Boeing A&M Environmental Technotes or Matsumoto website, in order to expand and pop the layer so that it can be easily removed.

Regarding claims 4 and 8, Haunschild discloses that the marking material and pavement marker comprise a bead layer containing transparent beads (Haunschild: col. 9, lines 64-66); and said bead layer being provided on a side of the layer opposite to a side which contacts with the structure (as seen in the modified picture below).



Regarding claim 5, Haunschild or Poole discloses a pavement marker comprising a temporary marking material as described above, wherein the pavement marker is disposed, for use, on a pavement as a surface of the structure by virtue of the binder contained in the layer. However, Haunschild or Poole fails to disclose that the layer and microballs are thermally-expansible. Boeing A&M Environmental Technotes or Matsumoto website teaches thermally-expansible microballs, as set forth above. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the microballs and layer of Haunschild or Poole to be thermally-expansible by using thermally-expansible microballs, as taught by Boeing A&M Environmental Technotes or Matsumoto website, in order to expand and pop the layer so that it can be easily removed.

5. **Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haunschild et al 5,981,033 or Poole 3,036,928 in view of Boeing A&M Environmental Technotes, Volume 6, Number 2 (May 2001).**

Regarding claims 2 and 6, Haunschild or Poole discloses a pavement marker material and a pavement marker as previously set forth, but fails to disclose that the

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thermally-expansible microballs are expandable at a predetermined temperature, and the expanded microballs make the thermally-expansible layer expand; and wherein the temporary marking material becomes peelable from the surface of the structure. Boeing A&M Environmental Technotes teaches thermally-expansible microballs, which enclose a gas, which expands when exposed to elevated predetermined temperatures, therefore making the microballs expand; and as the microballs expand they expand and pop the layer, in order to easily remove it. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the marking material and pavement marker of Haunschild or Poole to have thermally-expansible microballs expandable at a predetermined temperature, wherein the expanded microballs make the thermally-expansible layer expand, and wherein the temporary marking material becomes peelable from the surface of said structure, as taught by Boeing A&M Environmental Technotes, in order to easily remove the marking material.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haunschild et al 5,981,033 or Poole 3,036,928 in view of Boeing A&M Environmental Technotes, Volume 6, Number 2 (May 2001) as applied to claim 2 above, and further in view of Matsumoto website (http://web.archive.org/web/20010719003525/http://mtmtys.co.jp/english/product/fmc_f_f.htm) (July 19, 2001).

Haunschild or Poole as modified by Boeing A&M Environmental Technotes discloses a temporary marking material as set forth above, but fails to disclose the thermally-expansible microballs have an expandability of at least 10 times in term of

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volume, compared with the volume thereof at the temperature of working atmosphere. Matsumoto website teaches expansion ratios of thermally-expansible microballs of approx. 20, 60 and 70, depending on particle size, which is considered to meet the limitation of at least 10 times in claim 3 of the claimed invention. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the thermally-expansible microballs of Haunschild or Poole as modified by Boeing A&M Environmental Technotes to have an expandability of at least 10 times in term of volume, as taught by Matsumoto website, in order to expand the layer as much as possible, pop and remove it.

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haunschild et al 5,981,033 or Poole 3,036,928 in view of Matsumoto website (http://web.archive.org/web/20010719003525/http://mtmtys.co.jp/english/product/mc_f_f.htm) (July 19, 2001).

Haunschild et al 5,981,033 or Poole 3,036,928 discloses a pavement marker as set forth above, but fails to disclose that the thermally-expansible microballs have an expandability of at least 10 times in term of volume, compared with the volume at the temperature of working atmosphere. Matsumoto website teaches thermally-expansible microballs mixed and formed into a layer, with the expansion ratios of the thermally-expansible microballs of approx. 20, 60 and 70, depending on particle size, which is considered to meet the limitation of at least 10 times in claim 7 of the claimed invention. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the pavement marker of Haunschild or Poole to have

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thermally-expandible microballs with an expandability of at least 10 times in term of volume, as taught by Matsumoto website, in order to expand the layer, pop and easily remove it.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Expancel website (October 24, 2002) discloses thermally-expandible microballs. The Industry Survey and Research of Depaint Methods publication (2003 Aerospace Coatings Removal and Coatings Conference; Daniel W. DeKruif, Southwest Research Institute) discloses that microballs (Expancel Microspheres Introduction, Retrieved February 12, 2003 from www.expancel.com/english/about/Default.htm) have been successfully used as a release agent in the area of coatings removal.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alina Schiller whose telephone number is (571)270-3088. The examiner can normally be reached on Mon-Fri, 7:30AM-5:00PM EST, Alternate Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Victor Batson can be reached on (571)272-6987. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Victor Batson
Supervisory Patent Examiner
Art Unit 3600

8/03/2007